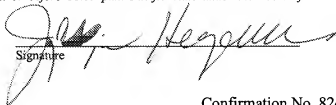


PATENT

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Signature

Applicant : Jung, Hyun-Sook Confirmation No. 8247
Application No. : 09/775,315
Filed : February 1, 2001
Title : POSITIVE ACTIVE MATERIAL FOR RECHARGEABLE LITHIUM
BATTERY AND METHOD OF PREPARING SAME
Grp./Div. : 1795
Examiner : Julian A. Mercado
Docket No. : 41671/P849

APPELLANT'S REPLY BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
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Post Office Box 7068
Pasadena, CA 91109-7068
February 17, 2009

Commissioner:

In his answer to Applicant's Appeal Brief, the examiner argues that because claim 11 recites a first binder adapted to be evaporated, that the claim is drawn to an intermediate product and not the final structure. Examiner's answer, page 7. As support for this contention, the examiner asserts that although the specification notes that not all of the binder is evaporated and traces of binder may remain in the mixture, the claim does not recite traces of binder in the mixture and that the traces of binder are disclosed in the specification only as a "mere possibility." Examiner's answer, page 7. However, those of ordinary skill in the art would recognize that evaporation of a binder would not result in the removal of *all* of the binder. On the contrary, those of ordinary skill in the art would recognize that some of the binder will

remain in the mixture, as explained in the specification at page 7, lines 15-18. As such, the examiner's failure to give the limitation of the first binder any patentable weight is improper.

The examiner also argues that Mayer discloses the first binder. In particular, the examiner argues that the water used in Mayer is akin to the first binder recited in claim 11. However, as admitted by the examiner, the water discussed in Mayer is used to wash the reacted pellets and is subsequently dried under vacuum. Examiner's answer, page 7. The examiner points to no passage in Mayer and provides no other basis for his contention that the water used to wash the pellets is, in fact, a binder. Applicant submits that the description in Mayer that the water is used to wash the pellets suggests that the water is not a binder. Indeed, Mayer fails to describe that the water binds the pellets to each other or any other material. As such, the water disclosed in Mayer is not akin to the first binder recited in the present claims.

Moreover, as noted in Applicant's Appeal Brief, the water in Mayer is described in the context of synthesizing LiNiO_2 . The description in Mayer of synthesizing LiNiO_2 does not discuss making an *active material* with a chemical mixture of two different oxides. In response, the examiner asserts that the LiNiO_2 is made from two different oxides, LiNO_3 and NiO . Examiner's answer, pages 7-8. However, that the LiNiO_2 is made from two different oxides is irrelevant, as those two different oxides (i.e., LiNO_3 and NiO) are reacted to form LiNiO_2 , and are not separately present in the *active material*, as recited in claim 11. In particular, claim 11 recites an active material in which the lithium manganese oxides and the lithium nickel cobalt oxides remain distinct chemical species and are bonded together by the first binder. As the oxides pointed out by the examiner (i.e., LiNO_3 and NiO) are reacted to form LiNiO_2 , they do not remain distinct chemical species, and the water described in the context of synthesizing the LiNiO_2 is not a binder. Accordingly, applicant submits that claim 11 is allowable over Mayer.

In response to applicant's arguments regarding the rejection of claims 1-4 over Pynenburg, Hasegawa and Imachi, the examiner argues that although Imachi does describe mid-discharge voltages and thermal stabilities, the claims "are wholly silent on any features drawn to voltages or thermal stabilities." Examiner's answer, page 8. However, applicant pointed to the failure of Imachi to disclose the mid-discharge voltages and thermal stabilities to show that the superior voltages and thermal stabilities achieved by the presently claimed products would not

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have been expected from the disclosure in Imachi. In particular, as noted in the specification, at page 13, line 1 to page 17, line 1, cells having ratios of oxides within the claimed range exhibited not only superior discharge capacities, but also superior thermal stabilities and mid-discharge voltages. Those of ordinary skill in the art looking at Imachi would not have expected the claimed mixture of oxides to exhibit these results. As applicant discussed the mid-discharge voltages and thermal stabilities as unexpected results in an effort to overcome the obviousness rejection, that these properties are not recited in the claims is irrelevant. Also, given that the claimed mixture of oxides exhibits unexpected and superior results, the examiner's continued rejection of claims 1-4 is improper.

In addition, the examiner continues to argue that the Declaration filed on March 30, 2007 is insufficient to establish unexpected and desirable results to overcome the rejection of claims 1-4 because the 2/8 ratio presented in the Declaration is not representative of the claimed range. Specifically, the examiner argues that the 2/8 range is too far from 4/6 to be sufficiently representative of the claimed range. However, the claimed range is 4/6 to 1/9, which is equivalent to a range of 4/36 to 24/36. The 2/8 data point is equivalent to 9/36, which is near the center value of the claimed range. As the 2/8 data point is neither too close to the lowest value of the claimed range nor too close to the highest value of the claimed range, applicant submits that it is sufficiently representative of the range.

Moreover, Table 2 of the present specification notes discharge capacities (in mAh/g) of 184, 167, 156 and 152 for positive active materials including the oxides in weight ratios within the claimed range. In particular, Table 2 lists improved discharge capacities for active materials including the oxides in a weight ratios of 1/9, 2/8, 3/7 and 4/6. As the Declaration and the specification list numerous values within the claimed range, applicant submits that the evidence of unexpected results is commensurate in scope with the claims.

The examiner also argues that even if the Declaration were sufficient, the results presented in the Declaration would not have been unexpected. Examiner's answer, page 9. Rather, the examiner asserts that the higher discharge capacity would have been an expected result given the teaching in Pynenburg that cell capacity is proportional to the area under the curve of the differential cell capacity. Examiner's answer, page 9. However, in addition to

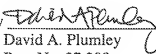
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improved discharge capacity, the specification notes superior mid-discharge voltages and thermal stabilities of the positive active materials including the oxides in a ratio within the claimed range. The examiner does not address these properties, and those of ordinary skill in the art looking at Pynenburg, Hasegawa and Imachi, would not have expected the superior results documented in the specification and Declaration. Given the unexpected results achieved by including the lithium manganese oxides and the lithium nickel manganese oxides in a weight ratio within the claimed range, claims 1-4 are allowable over Pynenburg, Hasegawa and Imachi.

In view of the above remarks, and those made in Applicant's Appeal Brief, applicant submits that all of pending claims 1-4 and 11 are allowable, and in condition for allowance

Respectfully submitted,

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